

# Canadian Building

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## BUILDING MANAGEMENT IN DAWSON CITY

by Andy Turnbull

Canadian Building, October, 1979

## DAWSON CITY

A unique challenge  
in building management  
and operation

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BUILDING MANAGEMENT IN DAWSON CITY

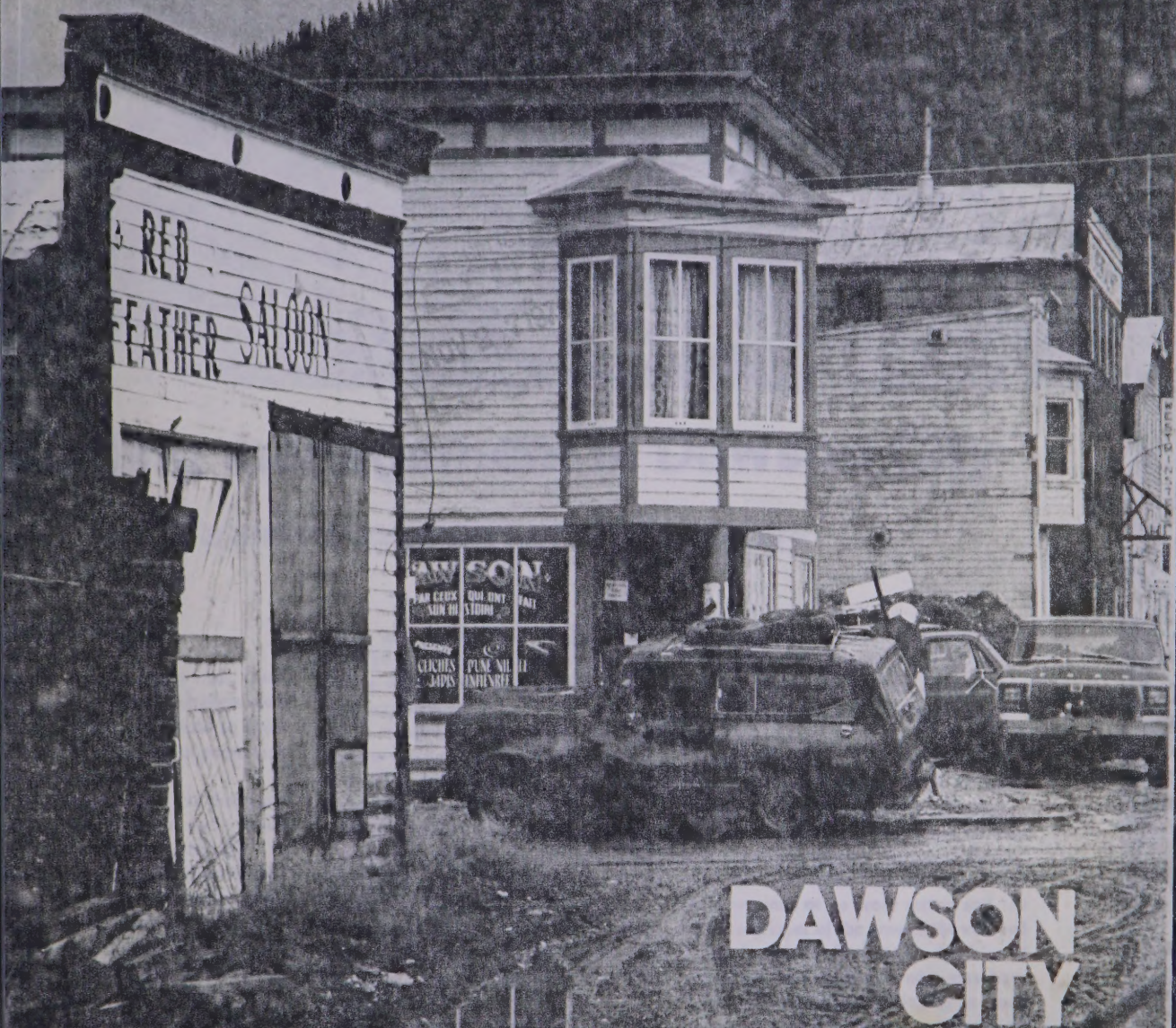
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# Building management in Dawson City

*It's still the toughest town in the country*

By ANDY TURNBULL

During the Klondike gold rush, Dawson City was the roughest, toughest town in the world. It still is, at least to those who face the awesome task of preserving and managing its buildings.

If you could let the place fall down and disappear, or tear it down and rebuild from scratch, the task would be easy.

But you can't do either of these things. Dawson is both a living community and a living legend. Preservation of the community is vital to the present residents, and preservation of the legend is vital to all Canadians.

So the city must survive. But consider the problems:

- Many of the structures were built 80 years ago, in frantic haste, for temporary use, by a gold-crazed community of transients, to some of the sloppiest construction standards in the history of the art.
- Climate, topography, soil conditions, and supply logistics are formidable challenges even with today's sophisticated technology.
- The normal problems of builders every-

where are present and exaggerated—shortage of money, shortage of time, conflicting objectives, and multiple government jurisdictions.

The challenges are being met, and Dawson is enjoying a slow but steady rebirth. This article describes a few of the things that are going on.

Winaut's Store was slated for restoration, but the building would have fallen down before the work could start. Parks Canada put a box in it, to save it.

The store is one of about 15 buildings being "stabilized" this year, as the first step of the Dawson City National Historic Sites project.

The two-storey frame building they call Winaut's Store was built about 1899, part of a building boom that turned Dawson City, Yukon, from a mud flat into a city of 30,000 people in two years during the Klondike gold rush. Soon after, a two-storey frame addition, and then a further single-storey frame addition were built onto the original.

By 1900 the building totalled close to 4,000 sq ft and it contained two restaurants, a circulating library, a shoe store

and a shoemaker, and a rooming house. Like the rest of Dawson it was crowded.

Later, as the city became a ghost town, the building became a general store—Winaut's Store—and in 1959 it was abandoned. Never a strong building—there were no building codes in boom towns—it promptly began to fall apart.

Most of it had been supported on mud sills—ten-inch logs laid on top of the permafrost—and these logs shifted up and down an inch or so every spring and fall as the top layer of the ground thawed and froze. In winter frost boils—bubbles of ice which form underground—may have lifted sections of the building by as much as two feet. About ten years ago it fell off its foundations and about a year later the corners split. It might have stood through this summer and it might not—and restoration was still years away. It had to be stabilized.

"We plan to restore as many buildings as we can", Randy Mitchell, project manager for Parks Canada says, "but we can't even think about that now. Restoration will take years—years of research to find out what each building was like orig-









## PROBLEMS

Many aging, tottering buildings (above) are legacies of the gold rush days. This spring, the problems were compounded by a disastrous flood, in which buildings were shifted bodily far from their original sites. One store (above right) was deposited on the main street (it is still open for business). Lot (right) with three cabins had only one before the flood.

inally, and then more years for the actual work.

"But we didn't have that time—buildings were falling down as we were looking at them—so we've opted for stabilization as the first step."

"Our first problem is the foundation", project engineer Ed Clow says, "because Dawson City is built on a typical arctic alluvial flood plain, at the junction of the Yukon and the Klondike Rivers. If it weren't for the permafrost, this site would be a sort of a thick soup."

"With the permafrost the bottom is stable, but the top isn't. We have a 30-inch layer that thaws every summer, and our first effort is to base the building on solid bottom."

"In one case—the old commissioner's residence—we had enough space under the building to dig out the surface layer and replace it with four feet of compacted gravel. Then we rested the building on a series of screwjacks, which we can adjust every year to keep it level."

"In a couple of other cases we've been able to lift the building straight up high enough to allow a small loader to work under it, but with most small frame buildings we move them to the side, put in a gravel pad, and then move the building back onto a set of cribs."

"Most of these buildings though, would fall apart if we tried to jack them up or move them. Like Winaut's Store, they're falling apart anyway, so we've had to develop a system that amounts to putting a box inside the building and then hanging the building on the box."

"We make a framework—rigid in three dimensions—usually of 6x6 timbers and ¾-inch plywood gussetts, to fill the

whole of the ground floor. Sometimes we put a lighter framework in the upper storeys, and then we hang the building from the framework. If inside partitions get in the way we run the framework through them, rather than risk the integrity of the structure."

"We've used the system on some unique buildings and it's worked quite well. One of the most unusual jobs was the old Bonanza Hotel—it weighed about 180,000 pounds—and we lifted it high enough to allow a loader to work under it."

"The original structure was a three-storey log building, and someone had added another three-storey frame extension. Then there was another two-storey frame extension, and a one-storey garage. We had to handle the whole thing as a unit."

"We put the framework inside the ground floor, and then we put vertical timbers up the outside to keep the walls from spreading, and we tied them to the inner framework."

"Winaut's store was another evolutionary building—built over a period of several years. It's really three buildings in one—none of them built very strong."

"But the store was lighter than the hotel, so we moved it about 50 feet to the side, then moved it back to a gravel pad. Now we're putting a new floor in it—because there was no hope of saving the original. It was too far gone."

"We had the original floor studied first, of course, for historical significance. That's one of the advantages of the framework—it's open inside so we can still study the building and even work in there. We're putting the new floor in with

the framework still in place.

"In most cases we can't do any major restoration for the time being, and we'll be leaving some of the frameworks in for about 15 years, with the building boarded up and perhaps with the facade fixed up a bit. Then when we can start the restoration, we'll just repair our way out of the framework."

"With the framework in place though, and with the roof and walls fixed up enough to keep the weather out, the building is safe until we can start work."

Buildings to be moved are mounted on two sets of laminated wooden beams with rollers between them, construction manager Giovanni Castellarin says. His crews use beams up to 60 feet long, nail-laminated on the spot, of 20-foot lengths of 2x12 lumber.

One set of beams is placed under the building to be moved, and continued out to the new site. The second set is supported on rollers made of two-inch pipe, and itself supports the building. Cable jacks connected to the ends of the beams pull the building.

The system eliminates the need for heavy equipment, Castellarin says, and is appropriate to the site. Much of the ground over which the buildings are moved is either too rough or too soft for dollies, and historical artifacts in the area must not be moved.

One building moved by the beam-and-jack method during the past summer was a two-storey former store, about 40 by 60 feet, built during the 1950's and recently rebuilt as housing for Parks Canada staff. It floated off its foundations in the Dawson City flood of early May, and came to rest blocking one of the main streets of









## SOLUTIONS

To stabilize shaky foundations, some buildings (above) are moved to new sites, after the structure and foundations have been reinforced. Some are then replaced on their old sites, after proper sub-bases are laid. The interiors of weak buildings in imminent danger of collapse are temporarily maintained by extensive internal bracing (right) until they can be permanently restored. Ed Clow, project engineer for Parks Canada, points out details.

the village.

The flood water rose ten feet in Dawson in about ten minutes of the early morning of May 3 this year, and it floated more than a dozen buildings in the village off their foundations. It happened because the ice went out in both the Klondike and the Yukon rivers at about the same time—a rare event—and the runoff was blocked by an ice dam downstream.

There were several dams actually, Castellarin says, and all but one broke in time to save Dawson. Residents had sandbagged part of the raised road which acts as a dike to protect the townsite from the Yukon River, and had seen the river rise and fall by as much as four feet several times during the day.

Just as they thought they were safe the final ice dam formed, and water poured over the dike. Castellarin's own three-year-old house floated off—complete with its mud-sill foundation—and came to rest about 50 feet away, blocking an alleyway. It's still there, resting level, and Castellarin and his family are living in it. The back porch though, is somewhere else—possibly in the Bering Sea.

One lot in the downtown area now has three cabins on it—where one stood before. One of the cabins floated about a hundred yards to the site, Castellarin says. One of the main streets of Dawson is still partly blocked by a store which extends diagonally off its lot. The store is open for business as usual.

All the historical buildings suffered some damage in the flood, Randy Mitchell says, but none of the damage was serious. Two restored buildings floated off their foundations, but both have been returned. One moved only about six inches,

the other swivelled about 45 degrees.

Dawson has been flooded before, by water and by people . . . An empty mud flat in 1896, it was a city of 30,000—the biggest west of Chicago and north of San Francisco—by 1900. It was incorporated as a city and became the territorial capital in 1902. Gold mining continued on a large scale until the late 1960's—is still continued on a reduced scale and the large-scale operations are coming back—but the population is down to 838 permanent residents now. The territorial capital was moved to Whitehorse in 1953.

But millions of people around the world have heard tales of the Klondike gold rush—the maddest, most insane gold rush in human history—and they want to see the place where it happened. Men walked off their jobs on the spot, back in 1898, when they heard of the ships loaded with tons of gold that docked at San Francisco. Some of them spent more than a year travelling to land where most of the best claims had been staked before the outside world heard of the discovery. Some of the latecomers found gold too, but not many of them.

The Klondike has its own spell though, gold or no gold, and millions have read of it in the works of poet Robert Service and novelist Jack London. Dawson now attracts an average of about 30,000 tourists a year in a hectic, three-month season.

For years though, the last remains of the boom-town days have been falling apart—and have been collected by souvenir hunters. Four years ago, Parks Canada began planning a campaign to save what's left.

The first step in saving the buildings is to put a box inside them.

## RESULTS

Winaut's Store (below), with foundations and structure stabilized, and front facade preserved, awaits complete restoration. Palace Grand Theatre (centre) has been completely restored by Parks Canada. The bottom photo shows the final restoration of a more notorious Dawson City establishment—this building is a former whorehouse.





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